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Course Syllabus

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BIOS 311 Advanced Experimental Biosciences Sp22

An Invitation to Learn

What is this course about?

In this ***course-based undergraduate research experience (CURE), students work in teams to investigate the purification and characterization of a protein.*** The proteins are typically enzymes, and our clients are research faculty at Rice. *As a team, you will choose the protein you want to work with and will decide what questions you want to ask.*

In your research project, you will focus on developing or optimizing a protein purification protocol as well as characterizing the purified protein. Some areas you may want to explore include induction of protein expression, bacterial lysis, chromatography parameters, and storage conditions for purified protein. Due to constraints, such as time, resources, and money, you may not achieve your desired outcomes by the end of the semester - that is ok as your paper is a ***research progress report***, not a paper submitted for publication in a scientific journal.

When do we meet?

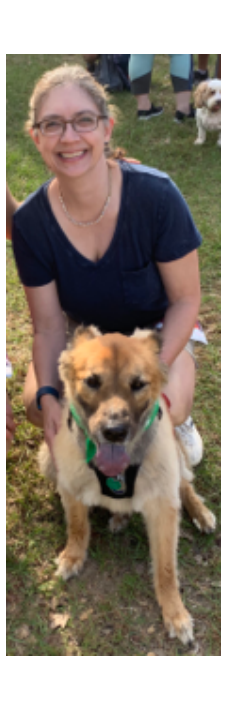
Scheduled meetings are from 1-5 PM on Wednesday (section 001) or Thursday (sections 002 & 003): we will meet in ABL 126 (inside the ABL 125 Biosciences Teaching Labs suite). ***For the first two weeks of the semester, we will meet synchronously in Zoom – you can join class from the Zoom link in the Canvas navigation bar.***

Throughout semester: self-scheduled, independent team work

- *Each student* needs to log *at least 30 hours* of project work by 15-Apr-2022
- Lab availability outside of scheduled time for your section is variable so you will need to plan ahead and notify the TAs and instructor
- Notify us of your experimental plans at least 24 hours in advance so we can make sure reagents/supplies and equipment are ready for your use

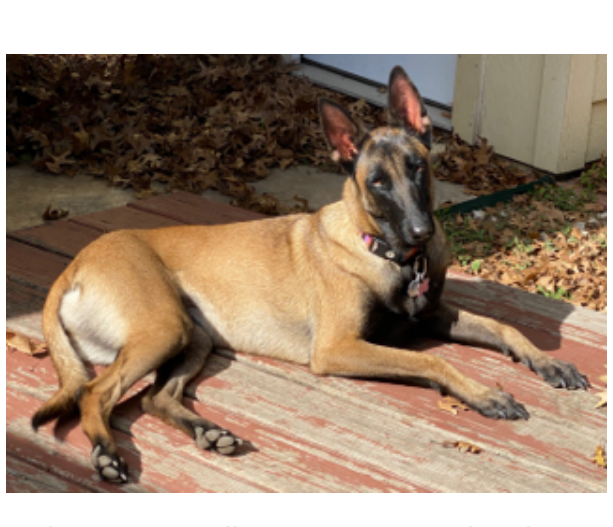
See PROJECT OVERVIEW and COURSE SCHEDULE for the tentative schedule.

Who is the instructor?



Dr. Beth Beason-Abmayr (bbeason@rice.edu): I am a Teaching Professor of BioSciences and am in my 24th year teaching at Rice! And I'm a Faculty Associate at Brown college (BSWB!!). I earned a BS in Microbiology from Auburn University and a PhD in Physiology & Biophysics from the University of Alabama at Birmingham. In addition to teaching BIOS 311, I also teach BIOS 313 Experimental Synthetic Biology, FWIS 115 Exploring Biological Research Challenges, and BIOS 340/540 Integrative Animal Physiology. I am active in the American Physiological Society Teaching of Physiology Section and am chair of the APS-Institute of Teaching and Learning (APS-ITL). As a recently elected Councilor in the Education Division of the Council on Undergraduate Research (CUR), I will work with other educators who are dedicated to supporting and promoting undergraduate research at all levels.

I love spending time with my beautiful dogs, Stormy, a 10-year old Chow Chow mix, and Mystic, a very active 2-year old purebred Belgian Malinois:



I am an avid reader, all kinds of books. I love the outdoors, especially visiting National Parks, water-skiing on Lake Conroe, and skiing at Brighton Resort at the very top of Big Cottonwood Canyon, Utah.

And David, my husband, earned his PhD in Chemistry from Rice with Dr. Paul Engel - he is a research chemist for ExxonMobil. His favorite hobby is amateur rocketry – both of us are members of Tripoli Houston. In case you didn't know, David designed and built Brown's Beer Bike Tower!

I will communicate with you primarily through Canvas so please make sure you have notifications "turned on" in Canvas so you get Announcements and other information about the course. Student hours will be conducted using Zoom – When you arrive for remote office hours, you will be directed to the waiting room; please be patient as I may be meeting with another student.

My research focuses on the Scholarship of Teaching and Learning (SoTL). The purpose of an ongoing study is to determine the factors that influence teaching effectiveness and learning. Your participation in this study will last for the duration of the current course and will entail activities no different from the regular activities you would otherwise engage in as part of this course. If you would like more information, please do not hesitate to ask. *If you would like to opt out of the study, please talk to Dr. Beason as soon as possible. [All protocols were approved by the Institutional Review Board of Rice University (Protocol FY2017-294).]*

Additionally, Rice is one of 12 universities participating in a National Science Foundation (NSF) project to create research rich undergraduate education by integrating research-based experiences into the curriculum: CUR Transformations Project. Our BioSciences department, is being studied as a model for curricular change. As a member of the Rice Leadership Team, I would greatly appreciate your completing a survey that will be administered at the end of the semester to give data to the NSF - the project PIs are studying students' learning experience and changes in the curriculum. I will not see your individual survey responses, just the compiled data.

What will I know or understand by the end of this course?

COURSE OBJECTIVES

BIOS 311 further advances basic laboratory, record keeping, and technical communication skills that were introduced and/or reinforced in BIOS 211: Intermediate Experimental Biosciences. Our emphasis is on the *process* of science (i.e., fundamental abilities and skills) rather than the *content* (i.e., discipline-specific lab techniques).

Overall course learning goals are outlined below; expected learning outcomes are specified on the Home page in Canvas. As you look over these learning goals, I encourage you to consider which areas represent your strengths, in which areas you want to strengthen your skills, and in which areas you have little or no experience. Return to this list later in the class to assess for yourself whether you are progressing towards these goals.

Goal 1: Possess laboratory skills desired of an independent researcher

Understanding the rationale behind procedures and asking questions that reflect a willingness to learn promote effective time management and successful completion of experiments. Our best students are always the ones who are engaged in the learning process.

Goal 2: Understand the importance of effective scientific communication

Communication and record keeping are fundamental to the dissemination of science.

Goal 3: Recognize the importance of discipline and responsibility when working in a professional environment

In addition to working independently, each student is expected to work well with each member of a team.

Goal 4: Experience that not all scientific experiments work as planned and formulate a path forward

Many scientific experiments do not work as planned and often yield either no results or findings that conflict with or differ from previous experiments. Our teaching labs in BioSciences provide a "safe" and nurturing environment where a student can embrace failure to build confidence and resilience.

Goal 5: Recognize the importance of asking questions to help you understand a concept

When exploring new fields, especially those that merge disciplines (like Biology and Engineering), it is normal to feel a little lost and even overwhelmed or embarrassed. Progress may feel a little slow at the beginning of this course because you may be learning new language and techniques.

Goal 6: Recognize appropriate context and understand how to report meaningful data

Paying attention to detail is important not only in performing experimental procedures but also in reporting the results to the scientific community and the general public.

Goal 7: Integrate and apply knowledge/experience to current and future work

On the path to become a self-reliant critical thinker, problem solver and communicator, a student progresses through several proficiency levels. A highly proficient student recognizes when the current skill level is not adequate to handle a particularly complex problem, and effectively seeks resources to acquire the needed skill. A student's present level of achievement and success is a reflection of past experiences and opportunities that have been made available as well as self-confidence.

What do I need for class?

REQUIRED TEXT AND RESOURCES

- **Victoria E. McMillan, *Writing Papers in the Biological Sciences***, Seventh Edition (2021), Bedford/St. Martin's, is the only required textbook for this course (NOTE: the Sixth Edition (2017) is fine if you already have that book from BIOS 211).
- **Canvas**: modules, course videos, supplemental resources, pre-lab exercises and other assignments, announcements, grade postings, class schedule, and more

RECOMMENDED TEXT

- *Protein Purification: Principles and Practice*, Third Edition (1994) Robert K. Scopes (Springer-Verlag New York , Inc.): there are several copies in ABL 126; additional copies may be available at Fondren.

REQUIRED MATERIALS

- Sharpie (*Extra Fine recommended*)
- face mask (*your responsibility*)
- computer

And since this course may at times require meeting in an online format, you will need to access **Zoom** - *there will be a link specific for this course in Canvas.*

How should I prepare for class?

Each week while the course meets formally you are expected to prepare for each class discussion and laboratory session. For the detailed schedule and background/details for each class, see Canvas Modules. Homework, quizzes, reflections, and communication assignments are submitted when specified in Canvas; students will get feedback and grades on these assignments typically within a week. *Additionally, you must come to **lab** prepared* -- this requires you to READ the experimental protocols BEFORE coming to lab, not just print a copy and bring it with you or open up a web site once you get to lab.

Announcements will be sent at least once a week with important information about the course; you are expected to read these Announcements in a timely manner - Announcements are archived in Canvas so you do not have to "dig" through your inbox to locate essential information about upcoming meetings, lab work, and/or assignments.

For discussions:

- Read over the material in Canvas and any additional materials and identify any questions for the instructor
- Watch the appropriate videos (links are in Canvas Modules)
- Obtain necessary information about techniques from the resources provided
- Come to each lab prepared to answer questions and evaluate your knowledge about the techniques, safety issues, scientific theory, and experimental significance

For laboratory work:

- Read the rules for safe conduct in the laboratory (see Lab Safety) before the first lab session and be aware of special safety concerns for each lab meeting; also review Rice_LabSafetyPolicy313.pdf
- Use resources to ensure that you know what we are doing and why we are doing it
- Prepare an outline (procedure, notes, calculations) so that you are ready to perform labwork
- Complete and submit online pre-laboratory assignments before coming to lab sessions
- Record your prelaboratory calculations in your notebook when applicable
- *Take notes in your team lab notebook using Google Docs in Canvas*: make sure you share your Google document with me so I have access to your lab notebook.

For follow-up work:

- Monitor assignment due dates in Canvas each week to ensure that you are aware of upcoming assignments
- Check Canvas frequently for new or updated class information

NOTE: Please bring your personal computer to discussion and lab with you so you will have access to assignments, procedure information, and additional resources during class (i.e., there are no handouts). Please see the course web site and Canvas for further details.

Why should I come to class?

You should come to every class meeting not only because it is required but also because you will learn a ton! Don't worry if you have never purified a protein before. I have intentionally designed each class and the activities and assignments that you will do so you can learn about protein purification and characterization. And, yes, since this course is built around teamwork, each member of the team needs to be in class so she/he/they can contribute to the success of the team and participate in class discussions and other activities (see BIOS_TLabs_LabCitizenshipFlyer.pdf). We have a limited amount of time together and there is so much I want to share with you about the biochemistry of proteins. If you miss class, you will indeed miss important stuff – more than that, **we** will miss **you**! Some experiences just can't be sufficiently replicated outside of our learning environment.

That being said, I realize that sometimes things happen that are beyond your control. You may get sick or have unexpected emergencies. So what should you do if something like that happens? *Please contact me by email as soon as possible* – you do not need to tell me the details of "what" happened; I just need to know that unforeseen circumstances have prevented you from coming to class. If something unexpected happens to me, I will notify you through Canvas Announcements of any changes to the schedule and/or meetings.

What if you have something already scheduled, like the MCAT or a doctor's appointment that you can't change because it is with a specialist who is booked for the next 3 months? Well, I consider that an unavoidable situation - please let me know as soon as possible what day you will miss class so we can plan accordingly. And you will want to let your team know as well.

And *please do not come to class if you are not feeling well*. Due to the continued pandemic, we may need to change the typical mode of attending/delivering class during the semester - I will notify you through Canvas of any changes to the schedule and/or lab meetings as soon as possible.

What will I do during class?

You will be doing different kinds of activities during class, including performing experiments and recording your work in an electronic lab notebook. Sometimes we meet as a whole class and other times you will come to lab to set up an experiment or just meet with your team. In addition to the lab work, you will give several brief presentations throughout the semester about the progress of your project.

LAB HOURS

You are expected to complete *a minimum of 30 hours of research work* over the semester related to your project. You will log your hours each time you work on your project either inside or outside the lab.

You may log hours for work outside of the lab that is directly related to your project (e.g., researching the literature, developing a protocol, planning experiments, analyzing results, writing your research paper, etc.). Lab work may be completed within the scheduled course time or any other time that the lab is attended by a TA, instructor, or the Teaching Laboratory Manager; you may not work in the lab without at least one supervisor. *You are encouraged to coordinate with your team so you can work in the lab together for major experiments. It is essential to stay in communication when working separately so that you are all on the same page.*

PARTICIPATION

- Students are expected to be actively engaged in the classroom. If you are joining class remotely, please keep your video camera on and microphone muted. Use the [chat, raise hand, unmute, etc.] when you have questions or would like to participate. Students needing an accommodation for using their camera or microphone should contact me at the beginning of the semester to discuss and work out needed adjustments.
- In this course, students are expected to work in groups. When you are physically in the laboratory
  - maintain a 6-foot distance whenever possible
  - wear a face mask at all times
  - work only at designated stations/spaces
  - follow specific guidelines, such as entering/exiting the lab, washing hands, disinfecting work areas, etc.
  - use screen-share software, Google docs, Zoom breakouts, portable white boards, etc. if you need to view other students' work
  - use the "Group Homepage" in Canvas for collaborating in Google docs, uploading files, discussing issues, etc.
- Online discussions and activities are an integral portion of the course. You may be asked to engage in an offline dialogue with colleagues throughout each session as indicated in session directions.
- Active engagement is an essential component of the learning process. Participation in this lab course includes active reading and discussion within online forums and in-person laboratory activities during the week. Students are expected to log into the course at the scheduled time, monitor course discussions, and engage as appropriate for the course several times a session.

TECHNOLOGY RESOURCES

- Students must have a working computer with a video camera, speaker and a microphone, and a working internet connection that allows them to be on video. Students should test their equipment before joining class. Undergraduate students should contact the Dean of Undergraduates if they have concerns about meeting this requirement.
- This course includes hands-on activities in the lab that require unique materials, equipment, or supplies. If you are participating in class remotely during a laboratory session, communicate with your team to determine how you can contribute to the work they are doing in the lab.
- Each work station in the lab will have a document camera that connects via USB; teams will be able to use these cameras to document the work they are doing in the lab for team members who are not physically present.
- If your computer/phone has no webcam/microphone, which may be needed to complete some assignments, please let me know as soon as possible and contact the Dean of Undergraduates if you need to request support via the Access and Opportunity Portal (HTTPS://AOP.RICE.EDU/APPLICATION).

PERSONAL PROTECTIVE EQUIPMENT (PPE) & PHYSICAL DISTANCING

Before returning to Rice each of you signed a "Culture of Care Agreement" where you promised to abide by the university's policies on PPE and physical distancing as well as other behaviors; you are expected to follow those policies at all times. Please carefully read the policies specific for this course (*also see PARTICIPATION below for additional guidelines for working in the lab*):

- Every student in the laboratory (ABL 126) is expected to properly wear a proper face mask at all times [RICE CRISIS MANAGEMENT POLICIES] and to abide by Rice's physical distancing policy (maintain at least six feet of distance from other persons whenever possible).
- If you have questions during class, please get my attention and ask your question from your work station. If you have questions at the end of class, please submit them via email or attend office hours; if you email a question, I will try to answer it within 24 hours on weekdays.
- Please leave the lab immediately after you finish your work to help reduce any crowding at the EXIT.
- I reserve the right to instruct students to leave the classroom if they are engaging in behavior that places faculty and/or students' health at risk. If students do not comply, I may cancel the class meeting and refer the student to Student Judicial Programs and the Dean of Undergraduates.

PRIVACY and CONFIDENTIALITY

- In line with FERPA REQUIREMENTS , recorded classroom discussions involving students will be available only to students officially registered and enrolled in the class. If you have concerns about appearing on these recordings, please contact me ahead of time.
- I may desire or plan to use recordings from this class for another educational purpose. If this situation arises, and in line with FERPA REQUIREMENTS , I will ask you to consider signing individualized consent FORMS . Students who do not provide written consent will be de-identified and/or omitted from all recordings.

How will my learning be evaluated?

ASSESSMENT AND GRADING

Several assignments for this course are team products, and each of you will have multiple opportunities to contribute your own ideas and effort to these creative works. Although everyone in the group typically receives the same score on a team assignment, I can assign grades individually if the contributions appear unequal. Individual work includes the research progress report as well as quizzes and reflections.

Contributions of assignment groups to the final course grade are as follows:

Assignment Group	Weight (%)
RESEARCH PAPER (Individual)	40
PROJECT PLAN & PROGRESS (Team)	20
LABORATORY NOTEBOOK (Team)	20
ENGAGEMENT & LEARNING	15
REFLECTIONS (Individual)	5

The final weighting for each category is subject to change at my discretion; after all assignments have been graded, I may change the weighting to raise final course grades.

You will submit all work electronically through Canvas using the Assignments, Quizzes, Collaborations, and Discussions tools; you will get feedback and grades on these assignments typically within a week. All work is to be completed as specified, *either* individually *or* as a team. Although "Quizzes" are untimed, they usually are a single submission. Please check Canvas for the Release/Due Dates for each assignment. Because I use the tools in Canvas to evaluate your work and give you feedback, and because I need to archive your work in Canvas, I am unable to accept any assignment submissions by email - if you have trouble submitting an assignment in Canvas, please email me and let me know so I can check the settings in Canvas.

LAB CITIZENSHIP

We expect students to follow explicit instructions and to recall and apply previous training to each new project. Puncutality, safe conduct in the laboratory, and efficient completion of responsibilities will enter into the evaluation of overall performance. Read about our expectations and performance criteria in Laboratory Citizenship and see BIOS_TLabs_LabCitizenshipFlyer.pdf . Additionally, each of you must adhere to the rules/guidelines in Lab Safety.

LATE POLICY

I try to set due dates for assignments so that you have plenty of time to complete your work on time. That being said, I think these deadlines fall into one of two categories: ***soft deadlines*** – where being a little bit late won't matter too much; and ***hard deadlines*** – where being late actually does matter. For those assignments with soft deadlines, there will be two dates specified in Canvas: **Due and Until**, giving you a *flexible window for submission with a built-in grace period*. For those assignments with hard deadlines, the Due and Until dates in Canvas will be the same. And of course, there is no penalty for starting early! *Ultimately, it is your responsibility to plan ahead - and since a lot of the work is submitted as a team, I know that you don't want to be "that person" who let the team down.*

- Because of the scaffolded nature of the assignments for developing your project (see PROJECT PLAN & PROGRESS (Team)), it is important to submit your work on time as those assignments build off of one another; additionally, I need time in between due dates to give you feedback and you need time to make revisions.
- With the drafts for each stage of the research progress report (see Research Paper Overview), I can most likely give you a grace period (check the "Until" date in Canvas). Submitting your work in a timely manner gives me time to provide feedback so you can improve your work.
- Quizzes (e.g., pre-lab exercises) and certain other assignments are not particularly useful if done after the deadline as those assignments are designed to prepare you for class and help you progress through the course; thus, I'm not likely to give you credit for late work because the learning value relies on the assignment being done on time – but you can always ask me to consider accepting your work.

If you just overlooked a due date for something, please let me know and I'll see what I can do - I understand that you may feel embarrassed about forgetting to submit an assignment but if you don't let me know, then I have no idea what happened. If you find you need significantly more time with a particular assignment, please come talk to me and let me know your situation. We can probably figure out a solution.

Although beyond the hedges there are often no exceptions, you will be given a break on late submission of assignments due to circumstances that are truly beyond your control. *Alternative due dates will be worked out with me on an individual basis.* Here are a few examples of **circumstances beyond your control**:

- A *serious* illness or accident
- A *serious* family emergency or death (you are on your honor here)
- Other unusual circumstances may count also. For example, if the university closes due to flooding on the date the work is due.

My concern is for you as a person as well as your progress and ability to learn in this course. I have to be fair and make sure that I don't do anything for one student that I wouldn't/couldn't do for the entire class; however, being fair doesn't necessarily mean that everybody in the class does everything at exactly the same time.

Will I get to practice different types of scientific communication?

Definitely! Both written and oral communication are emphasized in this course. As an individual, you will submit REFLECTIONS (Individual) about your personal experiences in this course. And you will write a research progress report about your work; you will submit a draft of each section of the report and will have the opportunity to revise your work based on feedback from the instructor before submitting the Research Paper.

Ongoing verbal communication with your teammates during and outside of lab is essential for promoting a strong team dynamic and is critical for brainstorming and developing the research proposal. To promote effective teamwork, each team will create a Group Contract where you define how you will work together as a team. As a team, you will choose a protein to investigate and propose a purification plan in a scaffolded manner (see PROJECT PLAN & PROGRESS (Team)).

As a team, you will maintain a laboratory notebook to academic standards (see description below and in Assignments); your notebook will be evaluated at least twice during the semester. We intend to use the overall quality of the laboratory notebook and your specific notebook entries to evaluate your effort. Describe all procedures that you perform in sufficient detail to repeat the experiment and record any raw data. Remember to describe any problems encountered or unexpected results. See Electronic Lab Notebook (ELN), Assessing the Lab Notebook, and the rubric with Lab Notebook: 1st Evaluation / Lab Notebook: 2nd Evaluation for specific evaluation criteria. ***Each team will maintain an electronic laboratory notebook (ELN) using Google Docs in Canvas***:

- ***The lab notebook is a chronological, real-time record of what happens during the lab.***
- ***Each team member is expected to make daily entries in the notebook during each lab.*** *A single team member must not, for example, act as a recordkeeper by writing in the notebook while the others carry out the work.* You may want to take turns writing the *Objectives/Daily Summary* for each lab day. Take turns recording information during lab and initial at the end of each entry by a different member of the team. *If multiple team members are making entries at the same time, make sure you do not cancel/type over each other's entries.* When you finish for the day, record the time on the final page.
- *It is absolutely critical that you record details such as WHO did WHAT (e.g., loading samples on the gel, setting up PCR, etc.) and LABELS on your samples.* You must have this information in your notebook to determine where a procedural error(s) occurred and to use the correct sample for that day's procedures.
- Remember, **do NOT "pre-write" objectives or methods in your notebook BEFORE you come to lab.**
- **Table of Contents updates, analysis / interpretation of data, and conclusions of findings can be entered in the ELN outside of the lab.**

In addition to the feedback I will give you on your work, you are encouraged to make appointments with the peer consultants at the Center for Academic and Professional Communication **(CAPC)** for help with both presentations and writing assignments. These consultants do not proofread or edit your work or help you with the content, but they will provide feedback on topics such as clarity in your slides, overall slide design, the organization of your writing, the coherence of your argument, and appropriate sentence structure. NOTE: For this course you are encouraged to work with a consultant who is not a biosciences major - if you can explain the science to someone who is not a scientist, then you have done a great job communicating your work! You can make an appointment using the CAPC online scheduler .

What is the Honor Code Policy for this course?

All students will be held to the standards of the Rice Honor Code, a code that you pledged to honor when you matriculated at this institution. Consult the Honor System Handbook at http://honor.rice.edu/honor-system-handbook/ for details about this code and how it is administered. This handbook outlines the University's expectations for the integrity of your academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process.

Please read the Honor Code Policy for BIOS 311. When you turn in an assignment, you must be able to make the statement, "On my honor, I have neither given nor received any unauthorized aid on this assignment." This pledge applies to all assignments you will complete for this course. *For detailed information, see the instructions/guidelines for individual assignments in Canvas.*

The following applies to all assignments: No one is to have access to any other student's work for this course, from this semester or from any previous semester. When assignments are prepared by teams, no team is allowed access to another person's or another team's written assignment as described above. Thus, it is both a violation to provide or post material not provided by the instructor or to use similar material for your own benefit. If you find that previous papers are posted on the web, kept in college libraries, or available in any other form, please report the suspected violation to the honor council.

What other important information should I know about?

DIVERSITY, EQUITY AND INCLUSION STATEMENT

The BioSciences DEI mission statement can be found at https://biosciences.rice.edu/diversity-equity-and-inclusion . As your instructor, I am committed to these principles. This course may consider topics of historical and current discrimination. Please feel free to discuss with the instructor any issues related to DEI that you feel are not being adequately addressed in this course.

STUDENTS WITH DISABILITIES

Course material will be delivered digitally (online or email) or in book format and may be visual (written documents, slides, videos, etc.), audio (videos, presentations, discussions), or interactive (questions, discussions, clickers, etc.). Course work will require answering questions online, recording entries in an electronic journal, typing papers, reading written materials, discussing material with peers, etc.

Any student with a documented or suspected disability needing academic adjustments or accommodations should 1) make sure this documentation is on file with the Disability Resource Center (Allen Center, Room 111 / adarice@rice.edu / x5841) to determine the accommodations you need; and 2) *meet with me in person or by email before the first day of class* to discuss your accommodation needs – If you require refinement of your accommodations during the semester please do not hesitate to contact me. All discussions will remain confidential. I will work with you to help you learn.

Psychiatric/ mental health disabilities: Reports suggest that about 1 in 5 college students suffers from anxiety, depression, bipolar disorder or other mental health issues. Students with psychiatric disabilities are entitled to reasonable academic accommodations as provided by the American Disabilities Act (ADA) of 1990 and 2008 amendments. You do not need to have had your disability diagnosed before your arrival at Rice. To receive accommodations you must register with the Disability Support Services (DSS) Office in the Allen Center. A Rice student requesting accommodations must self-identify to the DSS office and provide recent documentation of their disability. This documentation is used to establish the Rice student as an individual with a disability, and provides rationale for reasonable accommodations. This process requires evaluation and documentation so do not wait until the last minute, speak with your healthcare professional or consult with the Student Wellbeing and Counseling Center (https://wellbeing.rice.edu). You will not need to disclose your specific disability with your instructor but documentation is required to secure accommodations.

GENDER DIVERSITY STATEMENT

Everyone has the right to be addressed by the name and pronouns that correspond to their gender identity, including non-binary pronouns, for example: they/them/theirs, ze/zir/zirs, etc. Rosters do not list gender or pronouns so you may be asked to indicate the pronouns you use so that I don't make assumptions based on your name and/or appearance /self-presentation (you are not obligated to do so). If you use a chosen name, please let me know. Chosen names and pronouns are to be respected at all times in the classroom. Mistakes in addressing one another may happen, so I encourage an environment of openness to correction and learning. I will not, however, tolerate repeated comments which disrespect or antagonize students who have indicated pronouns or a chosen name. Chosen name and personal pronouns may evolve over time, so if at any point during the semester you would like to be addressed differently, please let me know.

LAND ACKNOWLEDGEMENT

The state of Texas, where Rice University is located, has been a meeting and trading location for Indigenous tribes including the Apache, Caddo, Comanche, Kiowa, and Wichita. Three federally recognized tribes and two state-recognized tribes currently reside in Texas. The land that Rice University occupies is the ancestral home of the Karankawa, Atakapa-Ishak, and Sana peoples. A painful history of settler colonialism, genocide, and forced migration and assimilation occurred here, and the descendants of these communities need to be recognized and included in the history of our community

WELLBEING & COUNSELING CENTER

My care and concern for you goes beyond your work in my class. The Wellbeing and Counseling Center supports student development and success by providing a good first point of contact for you to talk to someone about solutions to your wellbeing and mental health concerns. You can **call 713-348-3311 (24/7)** if you want to talk to someone . Visit the Student Wellbeing Office and the Rice Counseling Center to learn about their services and resources. Additional guides and self-help resources for students can be accessed at Resources .

BASIC NEEDS SECURITY STATEMENT

Food and housing insecurity can make learning difficult. Students who are having trouble making ends meet are encouraged to find support through the Access and Opportunity Portal (https://aop.rice.edu) and resources provided by the Office of Student Success Initiatives (https://success.rice.edu). For undergraduates, your College Magisters may be able to provide additional assistance. For graduate students, the Graduate Student Association (https://gsa.rice.edu/funding) and the Graduate and Postdoctoral Studies office (https://graduate.rice.edu/academics/finance/moseleyadams) have additional resources that may be of assistance.

TITLE IX RESPONSIBLE EMPLOYEE NOTIFICATION

Rice University cares about your wellbeing and safety. Rice encourages any student who has experienced an incident of harassment, pregnancy discrimination or gender discrimination or relationship, sexual, or other forms interpersonal violence to seek support through The SAFE Office. Students should be aware when seeking support on campus that most employees, including myself, as the instructor/TA, are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. For more information, please visit safe.rice.edu or email titleixsupport@rice.edu. For more information about Title IX, please contact Title IX Compliance Officer Richard Baker.

RELIGIOUS ACCOMMODATIONS

Both Rice's policy of non-discrimination on the basis of religion and our core values of diversity and inclusion require instructors to make reasonable accommodations to help students avoid negative academic consequences when their religious obligations conflict with academic requirements. Every reasonable effort should be made to allow members of the university community to observe their religious holidays without jeopardizing the fulfillment of their academic obligations. Absence from classes or examinations for religious reasons does not relieve students from responsibility for any part of the course work required during the period of absence. You are obligated to provide me with reasonable notice of the dates of religious holidays on which you will be absent.

Information contained in this course syllabus, other than the absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.

Course Summary:

Date	Details	Due
Wed Jan 12, 2022	BIOS 311 Wed	1pm to 3pm
Thu Jan 13, 2022	BIOS 311 Thurs	1pm to 3pm
Fri Jan 14, 2022	BIOS 311 Playlist	due by 11:59pm
	Project Choice	due by 11:59pm
	Constructive and Destructive Group Behaviors	due by 11:59pm
	Reflection 1: Semester Start	due by 11:59pm
Tue Jan 18, 2022	Group Contract	due by 11:59pm
	Project Question/Problem	due by 11:59pm
	Team Name	due by 11:59pm
Wed Jan 19, 2022	BIOS 311 Wed	1pm to 3pm
	Pre-Lab 1: Introduction and Bacterial Streak Plate (BIOS 311 001 Sp22)	due by 1pm
Thu Jan 20, 2022	BIOS 311 Thurs	1pm to 3pm
	Pre-Lab 1: Introduction and Bacterial Streak Plate (BIOS 311 002 Sp22)	due by 1pm
	Pre-Lab 1: Introduction and Bacterial Streak Plate (BIOS 311 003 Sp22)	due by 1pm
Fri Jan 21, 2022	Lab Safety (Multiple Choice)	due by 11:59pm
	Calculations for Preparation of Buffers	due by 11:59pm

January 2022

26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

Assignments are weighted by group:

Group	Weight
Research Paper	40%
Project Plan & Progress (Team)	20%
Lab Notebook (Team)	20%
Engagement & Learning	15%
Reflections	5%
Total	**100%**

Wed Jan 26, 2022	BIOS 311 Wed	1pm to 3pm
Thu Jan 27, 2022	BIOS 311 Thurs	1pm to 3pm
Fri Jan 28, 2022	BIOS 311 Prewriting Workbook 1: Title/Introduction	due by 11:59pm
	Lab Safety (Short Answer)	due by 11:59pm
Mon Jan 31, 2022	Draft 1: Title/Introduction (Team)	due by 11:59pm
Wed Feb 2, 2022	BIOS 311 Wed	1pm to 3pm
	Pre-Lab 2: Protein Expression and Purification (BIOS 311 001 Sp22)	due by 1pm
Thu Feb 3, 2022	BIOS 311 Thurs	1pm to 3pm
	Pre-Lab 2: Protein Expression and Purification (BIOS 311 002 Sp22)	due by 1pm
	Pre-Lab 2: Protein Expression and Purification (BIOS 311 003 Sp22)	due by 1pm
Mon Feb 7, 2022	Experimental Plan and Timeline	due by 11:59pm
Tue Feb 8, 2022	Reflection 2: Lab Experiences and Framing	due by 11:59pm
Wed Feb 16, 2022	BIOS 311 Wed	1pm to 3pm
	Pre-Lab 3: Protein Determination and SDS-PAGE (BIOS 311 001 Sp22)	due by 1pm
	Lab Notebook: 1st Evaluation (BIOS 311 001 Sp22)	due by 11:59pm
Thu Feb 17, 2022	BIOS 311 Thurs	1pm to 3pm
	Pre-Lab 3: Protein Determination and SDS-PAGE (BIOS 311 002 Sp22)	due by 1pm
	Pre-Lab 3: Protein Determination and SDS-PAGE (BIOS 311 003 Sp22)	due by 1pm
	Lab Notebook: 1st Evaluation (BIOS 311 002 Sp22)	due by 11:59pm
	Lab Notebook: 1st Evaluation (BIOS 311 003 Sp22)	due by 11:59pm
Wed Feb 23, 2022	BIOS 311 Wed	1pm to 3pm
Thu Feb 24, 2022	BIOS 311 Thurs	1pm to 3pm
Wed Mar 2, 2022	BIOS 311 Wed	1pm to 3pm
Thu Mar 3, 2022	BIOS 311 Thurs	1pm to 3pm
Fri Mar 4, 2022	BIOS 311 Prewriting Workbook 2: Materials and Methods	due by 11:59pm
Mon Mar 7, 2022	Draft 2: Materials and Methods (Team)	due by 11:59pm
Wed Mar 9, 2022	BIOS 311 Wed	1pm to 3pm
Thu Mar 10, 2022	BIOS 311 Thurs	1pm to 3pm
Mon Mar 21, 2022	Reflection 3: Methodology and Evaluation / Synthesis	due by 11:59pm
	Draft 3: Figures & Tables (Team)	due by 11:59pm
Wed Mar 23, 2022	BIOS 311 Wed	1pm to 3pm
Thu Mar 24, 2022	BIOS 311 Thurs	1pm to 3pm
Wed Mar 30, 2022	BIOS 311 Wed	1pm to 3pm
Thu Mar 31, 2022	BIOS 311 Thurs	1pm to 3pm
Fri Apr 1, 2022	BIOS 311 Prewriting Workbook 3: Abstract/Preliminary Findings & Discussion/Conclusions & Next Steps	due by 11:59pm
Mon Apr 4, 2022	Draft 4: Abstract/Preliminary Findings (Individual)	due by 11:59pm
Wed Apr 6, 2022	BIOS 311 Wed	1pm to 3pm
Thu Apr 7, 2022	BIOS 311 Thurs	1pm to 3pm
Wed Apr 13, 2022	BIOS 311 Wed	1pm to 3pm
Thu Apr 14, 2022	BIOS 311 Thurs	1pm to 3pm
Fri Apr 15, 2022	Lab Citizenship: Self-Evaluation	due by 11:59pm
	Lab Notebook: 2nd Evaluation	due by 11:59pm
Tue Apr 19, 2022	Research Progress Team Presentation (BIOS 311 001 Sp22)	due by 11:59pm
Wed Apr 20, 2022	BIOS 311 Wed	1pm to 3pm
	Research Progress Team Presentation (BIOS 311 002 Sp22)	due by 11:59pm
	Research Progress Team Presentation (BIOS 311 003 Sp22)	due by 11:59pm
Thu Apr 21, 2022	BIOS 311 Thurs	1pm to 3pm
Fri Apr 22, 2022	Project Summary	due by 11:59pm
Mon Apr 25, 2022	Reflection 4: Revisions for the Research Paper	due by 11:59pm
Wed Apr 27, 2022	BIOS 311 Wed	1pm to 3pm
	LCAS	due by 11:59pm
Thu Apr 28, 2022	BIOS 311 Thurs	1pm to 3pm
Fri Apr 29, 2022	Research Paper	due by 11:59pm
Mon May 2, 2022	Reflection 5: Communication and Semester End	due by 11:59pm
	Lab Citizenship	